



SNS COLLEGE OF TECHNOLOGY
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Trigger type probe system

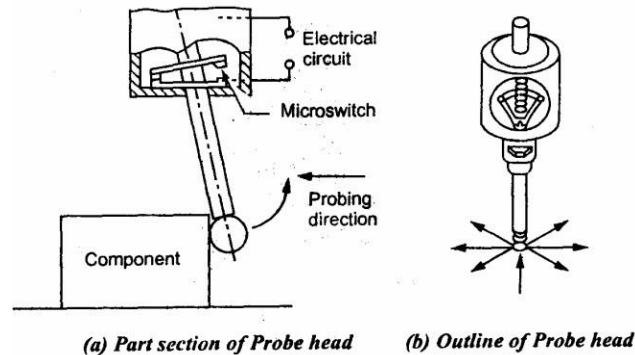


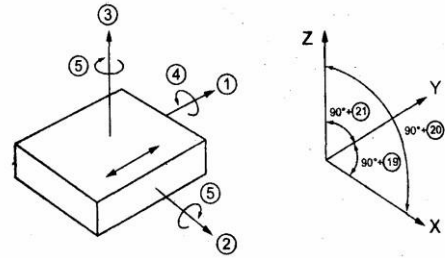
Fig 4.17 Trigger Type Probe System

- The buckling mechanism is a three point bearing the contacts which are arranged at 120° around the circumference. These contacts act as electrical microswitches.
- When being touched in any probing direction one or more contacts is lifted off and the current is broken, thus generating a pulse, when the circuit is opened, the co-ordinate positions are read and stored.
- After probing the spring ensures the perfect zero position of the three-point bearing. The probing force is determined by the pre stressed force of the spring with this probe system data acquisition is always dynamic and therefore the measuring time is shorter than in static principle.

Measuring type probe system It is a very small co-ordinate measuring machine in which the buckling mechanism consists of parallel guide ways when probing the spring parallelogram are deflected from their initial position.

- Since the entire system is free from, torsion, friction, the displacement can be measured easily.

- Parallel to the axes 1, 2 and 3 and by three rotational deviations about the axes 4, 5 and 6. Similarly deviations 7-12 occur for carriage and 13-18 occur for Z carriage and the three squareness deviations 19, 20 and 21 are to be measured and to be treated in the mathematical model.



- Moving the probe stylus in the Y direction the co-ordinate system L is not a straight line but a curved one due to errors in the guide.
- If moving on measure line L further corrections are required in X, Y and Z coordinates due to the offsets X and Z from curve L resulting from the pitch angle 5, the roll angle 4 and the yaw angle 6.
- Similarly the deviations of all three carriages and the squareness errors can be taken into account.
- The effect of error correction can be tested by means of calibrated step gauges.

The following test items are carried out for CMM.

(i) Measurement accuracy

- a. Axial length measuring accuracy
- b. Volumetric length measuring accuracy

(ii) Axial motion accuracy

- a. Linear displacement accuracy
- b. Straightness
- c. Perpendicularity
- d. Pitch, Yaw and roll.

The axial length measuring accuracy is tested at the lowest position of the Z-axis. The lengths tested are approximately 1/10, 1/5, 2/5, 3/5 and 4/5 of the measuring range of each axis of CMM. The test is repeated five times for each measuring length and result plotted and value of measuring accuracy is derived.

